old students for subscriptions towards a new chair on the mathematical side of natural philosophy, to be called the "Tait Chair."

Prof. MacGregor's original contributions to scientific literature other than those already indicated are mainly concerned with electrical conduction, ionisation, densities, and freezing-point depressions of solutions. These are published chiefly in the Transactions and Proceedings of the Royal Society of Canada, the Royal Society of Edinburgh, and in the *Philosophical Magazine*. He also wrote interesting addresses on educational subjects of a more general nature, and a few years ago published for the use of the students a pamphlet on physical laws and observations.

Prof. MacGregor was an enthusiastic teacher, and spared neither time nor trouble for the sake of his students. His accessibility endeared him to all. Busy though he was at all times, he was ever ready to lay aside his personal work, however pressing, so as to discuss any difficulties his students might have. His was a sunny, genial nature, finding pleasure in ministering to the needs of others; and there was no trouble too great which he would not take on behalf of his friends.

C. G. KNOTT.

NOTES.

WE regret deeply to announce that Lord Avebury died on May 28, at seventy-nine years of age.

THE annual visitation of the Royal Observatory, Greenwich, will be held on Saturday, June 7.

THE Croonian lecture of the Royal Society will be delivered by Dr. Robert Broom on Thursday, June 5; the subject will be "The Origin of Mammals."

WE learn from the *Revue Scientifique* that the mathematical works of the late Henri Poincaré are to be published by the firm of Gauthier-Villars, under the auspices of the Minister of Public Instruction and the Paris Academy of Sciences.

AT the meeting of the Royal Meteorological Society on Wednesday, May 21, Dr. V. F. K. Bjerknes, professor of geophysics in the University of Leipzig, and Dr. Hugo Hergesell, president of the International Commission for Scientific Aëronautics, Strassburg, were elected honorary members of the society.

THE American Association for the Advancement of Research by Women has awarded the Ellen Richards prize of 1000 dollars to Dr. Ida Smedley (Mrs. MacLean) for her work on the biochemical synthesis of fatty acids. The prize is offered biennially, and was last awarded in 1909, when the successful candidate was also an Englishwoman, Dr. Florence Buchanan.

THE fourth International Congress for the Hygiene and Salubrity of Dwellings is to be held at Antwerp on August 31–September 7. The congress will be divided into four sections: the hygiene of emigrants, colonial hygiene, hygiene of ports and ships, and the development of towns from the hygienic point of view. Persons desiring to take part in the congress should communicate with the treasurer, Mr. A. Cols, notary, Willem Tell Street, 3, Antwerp.

THE president of the Royal Society has received from the Portuguese Legation subscriptions amounting to 21*l*. 5*s*. forwarded by the Society of Medical Science of Lisbon as a donation to the Lister Memorial Fund. A sum of 867 dollars has been collected by Dr. W. W. Keen, of Philadelphia. Further donations intimated from foreign countries include:—University of Paris, 500 francs; University of Lyons, 100 francs; Société de Chirurgie of Lyons, 100 francs; faculty of medicine of the University of Munich, 100 marks; faculty of medicine of the University of Breslau, 110 marks; and Stockholm Medico-Chirurgical Society, 5*l*. A donation of 10*l*. has been received from the University of Calcutta.

WE are glad to be assured by Prof. Sampson, Astronomer Royal for Scotland, that the damage to instruments due to the explosion of a Suffragette bomb at the Royal Observatory, Edinburgh, on May 21, was happily insignificant. The bomb was placed on the floor below that of the west dome. The floor of the west dome is a heavy one, and thoroughly protected the 24-in. reflector and Cooke photovisual above it. The driving clock for these telescopes was near the bomb, but appears uninjured except in respect to its glass case. On the floor below falling plaster smashed the glass case of the Cooke drum chronograph, which is at present out of use. The disturbance was recorded by the Milne seismograph at 0h. 57·2m. as a small, sharp oscillation of approximately 0·1″ semi-amplitude.

SINCE 1908 the Somersetshire Archæological and Natural History Society has engaged in excavation work at Glastonbury Abbey, and year by year results of great historical and archæological importance have been secured. Last year, the society, at the request of the Abbey trustees, appointed a special committee to undertake the supervision of the future excavation work, and the researches will proceed systematically. An income of 250*l*. a year is needed to carry out the work efficiently, and the funds hitherto raised by subscriptions and donations are exhausted. The committee now makes a further appeal for money. Subscriptions or donations may be sent to the treasurer of the Glastonbury Abbey Excavation Fund, The Castle, Taunton, Somerset.

AT the annual meeting of the Royal Geographical Society on Monday last, in addition to the presentations made to Lady Scott and Mrs. Wilson of the awards voted to their husbands, who died in the Antarctic, and that made to Lieut. Campbell, which are referred to elsewhere, the following awards were made:—The Victoria medal to Col. S. Burrard, Surveyor-General of India; the Murchison award to Major H. D. Pearson, for his work in the Sudan; the Gill memorial to Miss Lowthian Bell (Mesopotamia, &c.); the Cuthbert Peek grant to Dr. Felix Oswald (Armenia); and the Back bequest to Mr. W. S. Barclay (South America). In his anniversary address, Earl Curzon, as president, referred to the momentous events of the past year in polar exploration, and made the interesting announcement that the society expects presently to receive into its charge

Scott's diary and some of Dr. Wilson's beautiful water-colours. He mentioned the important work projected in the Arctic by Amundsen, Stefánsson, and Macmillan, and briefly reviewed geographical work elsewhere. He had naturally a good deal to say on the new establishment of the society at Kensington Gore, viewed with optimism the important bearing which the better conditions under which the society will now work should have on the progress of geographical study in this country, and discussed the new meeting-hall which he clearly expects to see built. At the annual banquet in the evening, Sir E. Grey and Lord Milner, among the speakers, both testified emphatically to the importance of geographical teaching and study, in relation to the maintenance of empire, on their now broadened basis of the bearing of physical conditions upon human activities.

THE annual congress of the Royal Institute of Public Health was held in Paris, May 14–19, Prof. W. R. Smith, the principal of the institute, presiding. Important papers on tuberculosis were contributed by Prof. Delépine ("Milk-borne Tuberculosis") and Dr. Lister ("The Future of State Campaigns against Tuberculosis"), who considered that the future of campaigns against the disease was a matter more for the social reformer than for the public health officer. Mr. L. Gaster lectured on artificial illumination, making many useful suggestions on the nature of the illuminant to be employed and its methods of use. Dr. Bertillon arranged an exhibit showing the mortality in a number of trades and employments, contrasting those of Great Britain with those of France and one or two other countries. The members of the congress were most cordially received, and visits were arranged to all the important institutions, municipal and public, factories, and so on. The Harben gold medal of the institute for 1912 was presented to Dr. Roux, of the Pasteur Institute.

THIS year the Société Helvétique des Sciences Naturelles will hold its meeting at Frauenfeld on September 7–10. Among the lectures announced already the following may be mentioned:—Prof. Grubenmann, of Zurich, "Ueber die Entwicklung der neuern Gesteinslehre"; Prof. Fuhrmann, of Neuchâtel, "Voyage d'études scientifiques dans les Cordillères de Colombie"; Dr. de Quervain, of Zurich, "Die Durchquerung Grönlands durch die schweizerische Expedition und deren Ergebnisse"; Prof. Keller, of Zurich, "Die Tiergeographie des Kaukasus"; Prof. Maillefer, of Lausanne, "Les lois du géotropisme"; Prof. Rikli, of Zurich, "Pflanzengeographische Studien über die Kaukasusländer"; and Prof. Dutoit, of Lausanne, on a subject of physical chemistry. On September 9 the Swiss mathematical, physical, chemical, geological, botanical, and zoological societies will also hold their annual meetings at Frauenfeld. A number of attractive excursions have been arranged for visitors. Persons desiring to attend the meeting of the Swiss Association should communicate with M. A. Schmid, president of the committee, at Frauenfeld.

THE Board of Agriculture and Fisheries has issued a circular intimating that numbers of salmon smolts and kelts have been "marked" in various rivers, by means of a wire, or a wire and label, attached to the dorsal fin. Rewards will be paid for the return of these marks, accompanied by the particulars of sex, length, weight, and condition of the fish to which it was attached, and by a few scales taken from the body of the fish behind the gill-cover. The object of these experiments is to trace the migrations of the fish, mainly the length of the period spent in the sea. The object of the removal of the scales is to determine, from a microscopical examination of the latter, the age of the fish and its history as regards sexual maturity and previous spawning acts. Anglers and others interested in the study of the salmon will welcome the instigation of these experiments by the Board. Investigations of a similar kind have been made so far mainly by private persons in this country, but with the resources at the command of the Board very valuable results should be obtained. The investigation is, of course, one which depends for its success upon the cooperation of sportsmen and fishermen, and we cordially recommend that this assistance be rendered.

ON May 23 a communication was made to the Hon. Society of Cymmrodorion, by Mr. T. A. Acton and Mr. W. Burton, descriptive of the excavations that have been conducted during the last three years at Holt, near Wrexham. Mr. Acton has discovered the site of a tile and pottery works of the twentieth Roman Legion, and he gave a review of the discoveries of the foundations of buildings for housing the workers and probably the garrison of what must have been practically a frontier post, and also of the excavations of a series of potters' kilns. Thousands of fragments of Roman tiles and pottery have been excavated from the site, and are now in process of classification. Mr. William Burton explained the construction of the kilns, which are fortunately so well preserved that the leading features of the construction of both the circular and rectangular kilns used by the Romans in various parts of the empire are now clearly established; they foreshadow in a remarkable way the main principles of modern kiln construction. Mr. Burton exhibited three models of different types of kilns made from careful measurements of the remains, and these will be deposited ultimately in the British Museum.

THE census report of the Nicobar Islands for 1911, just published, gives a good example of the custom of Couvade or "hatching." For some days or even weeks before the wife's confinement, the people in the hut, as a form of sympathetic magic, unloose all the cane and fibre lashings of their spears or vessels. During the first month after the birth of his first child the father is treated as an invalid. On subsequent occasions this lasts only one or two days. He is looked after and fed by his wife, and may not bathe or chew betel. These rules, which are enforced by the Menluanas, or medicine-men, are so irksome that it is believed their observance accounts for a widespread avoidance of maternity among the women.

THE classical account of the pagan tribes of the Malay Peninsula by Messrs. Skeat and Blagden is being gradually supplemented by later inquiries among this interesting people; but these investigations only serve to prove the correctness of the earlier record. Mr. L. H. N. Evans now publishes in the Journal of the Federated Malay States Museum, which takes the place of the Perak Museum Notes, an account of the Besisi of Tamboh, Kuala Langat, Selangor. Their advance in culture is illustrated by the fact that they are now able to ride bicycles, which they borrow from the Chinese. Mr. Evans made a considerable ethnographical collection, including specimens of two methods of fire-making—by the saw and drill—which are being replaced by the use of matches and the flint and steel. As an example of culture contact, two ingenious forms of animal traps are now found in use from Nepal and Assam eastward through Indo-China and the Malay Peninsula, and all over the Greater Sunda Islands.

THE researches that are being carried out at the present time, with so much patience and minuteness, upon disease-producing parasites, though undertaken primarily with practical aims in view, are helping to accumulate in many cases data of great value from a purely scientific and theoretical point of view. It is becoming, for example, increasingly evident that the pathogenic trypanosomes represent a group of incipient species in process of coming into being, in many cases differentiated physiologically, but not morphologically. From this point of view the human trypanosome generally known as *Trypanosoma rhodesiense* is very interesting. It is possible that it is an old-established species lately discovered; but it is far more probable that it has become but recently differentiated, and that it represents either a race of *T. brucii* that has acquired the power of living in human blood, or a race of *T. gambiense* adapted to transmission by *Glossina morsitans*. The former view has been advocated by Bruce and his colleagues, of the Royal Society's commission working in Nyasaland; but Stephens and Fantham, in a paper in the Annals of Tropical Medicine and Parasitology (vol. vii., No. 1), find it difficult to distinguish between *T. rhodesiense* and *T. gambiense* by means of measurements. The chief distinctive character of *T. rhodesiense* is the presence of the so-called posterior nuclear forms, which are studied by Blacklock in a memoir in the same journal; these forms have been found, however, in other species of trypanosomes, including *T. brucii*.

WE have received a report by Prof. E. C. Starks, issued in the Leland Stanford Junior University Publications, on the fishes collected by the second Stanford expedition to Brazil, in which several species are described as new. A report has also reached us on the fishes of certain tanks in Bengal, drawn up by Mr. T. Southwell and Capt. R. B. S. Sewell, and published at Ranchi by the Bihar and Orissa Department of Agriculture.

THE March issue of the Proceedings of the Philadelphia Academy contains a report on parasitic worms infesting the animals in the local zoological gardens. The average number of infestations is about forty-five per annum, but in 1910 there was a rise, due to the prevalence of cestodes in birds, while a second rise, owing to nematodes in parrots and perching birds, occurred in the following year. Among mammals Carnivora are much more heavily infested than any other order, monkeys, ungulates, and marsupials making nearly a dead-heat for second place. The new observations confirm previous statements that nematodes are the most common parasites, these being followed by cestodes, flukes, and Acanthocephali, in the order named.

IN *The American Museum Journal* for March Mr. Barnum Brown describes, with a good series of photographs, the discovery at Red Deer River, Alberta, of a new crested dinosaur, now named Saurolophus, "the crested saurian." In life this animal was about 32 ft. in length, and stood about 15 ft. in height when erected. Like Tracodon, it was a herb-eater, and unable to defend itself from the contemporary flesh-eating Albertosaurus, except by its power of escaping danger by swimming. Great numbers of these creatures lived in the prehistoric coastal marshes, and in a single quarry on the Red Deer River bones of several hundred individuals, mostly of this kind, have been washed out of the bank. Another set of bones discovered in the same district represents the skeleton of another new dinosaur coming from an older formation, and probably an ancestor of Saurolophus.

THE first of a series of studies on the evolution of the teeth of primates, by Dr. L. Bolk, professor of anatomy in the University of Amsterdam, has been published (G. Fischer, Jena, 1913, price 5 marks). A completely new interpretation is given of the relationship between milk and permanent teeth. We have hitherto regarded them as belonging to different epochs of evolution—the milk teeth representing a primary dental outfit, the permanent a secondary acquisition. Prof. Bolk, from a prolonged inquiry into the developmental stages of the teeth of reptiles and mammals, has accumulated evidence to show that both reptiles and mammals have arisen from a stock which was furnished with three rows of teeth, all of which came into use at the same time. In both reptiles and mammals the outer row is represented by vestiges—the so-called pre-lacteal dentition. In reptiles the middle and inner rows persist and come into use together. In the higher or diphyodont mammals the middle rows come into use first, forming the milk dentition, while the inner is delayed in its appearance, and forms the permanent set of teeth. In lower or monophyodont mammals both middle and inner rows of teeth—that is to say, milk and permanent teeth—come into place and use together, forming an apparently linear series. Prof. Bolk's hypothesis promises to simplify our conception of the evolution of mammalian teeth, and explains many facts which were formerly obscure.

MR. W. ENGELMANN, Leipzig, has lately issued parts 55, 56, 57, and 58 of "Das Pflanzenreich." This magnificent *regni vegetabilis conspectus* is making rapid progress, though up to the present time only one group (Sphagnaceæ) of cryptogamous plants has been dealt with. Heft 55, by Prof. Engler, begins the account of the Philodendroideæ section of the large family Araceæ by Engler and Krause, and is unusually well and fully illustrated with new figures. Heft 56, by Dr. F. Kranzlin, forms a self-contained monograph of the "Indian shot" family, Cannaceæ, and concludes the treatment of the interesting order Scitaminales, the remaining three families of which (Musaceæ, Zingiberaceæ, Marantaceæ) have already been described by Schumann; in his introduction the author gives an account of the various interpretations which have been put forward of the structure of the outer floral organs in Canna, the sole genus in the family. In Heft 57, Dr. Pax, assisted by Käthe Hoffmann, continues the monograph of the large and difficult family Euphorbiaceæ; in addition to figures of many of the species, there is given a useful table showing the geographical distribution of the genera belonging to the section (Chrozophorinæ) dealt with in this part. Heft 58, by G. Grüning, gives the Stenolobeæ section of the same family.

WE have received a copy of vol. xlviii., No. 8, of the Proceedings of the American Academy of Arts and Sciences, consisting of an extensive memoir by Mr. J. W. Hotson on culture studies of fungi producing bulbils and similar propagative bodies. In this paper the author brings together the scattered references in mycological literature to the occurrence in various fungi of these propagative bodies, which are cell-masses ranging from spore-like structures to large sclerotium-like forms, and indeed shading gradually into these two definite and distinct types (spore and sclerotium) of reproductive body. After describing in detail, with numerous excellent figures on twelve plates, the structure and development of bulbils in the various species examined during his long-continued culture experiments, the author discusses the morphological significance, distribution, and occurrence of bulbils in fungi. He concludes that in most cases, if not in all, these bodies are not to be regarded as abortive spore-fruits (ascocarps), but rather as an auxiliary method of reproduction that has been interpolated in the life-history of certain fungi without definite relation to other methods of reproduction they may possess, or that if they have in reality been derived from some other reproductive body, this was more probably some form of non-sexual spore rather than the primordium of an ascocarp.

THE Memoirs of the Indian Meteorological Department, vol. xxi., part 7, contain an interesting inquiry into the cold weather storms of northern India by Dr. G. T. Walker and Rai Bahadur Hem Raj. It is pointed out that the storms in question, which occur between December and April, are of considerable agricultural importance, and that it is extremely desirable that their origin should be ascertained, the view that these rain-bearing disturbances are generated over the arid districts of Persia and Baluchistan being by no means free from difficulty. An examination of charts recently prepared by the Meteorological Service of Egypt for the years 1906–12 shows that about seven-tenths of the disturbances which affect north-west India in those months are continuations of depressions from southern Europe, but the paths of the depressions vary considerably from year to year. In order to confirm the origin of most of the storms without a large expenditure of labour in preparing charts, Dr. Walker had recourse to statistical methods. He says that if these storms pass over Syria or Asia Minor it is to be expected that severe winters with much precipitation in these areas will tend also to be severe winters in north-west India. "A calculation was accordingly made of the correlation coefficients of the seasonal rainfall in north-west India with those of rainfall in places to the west for which records were available." The evidence shows that the winter seasons in the west of Asia Minor, in Syria, and in Malta have a closer resemblance to those of north-west India than do the winter seasons of Persia and Mesopotamia.

IN his presidential address to the Institution of Mining and Metallurgy, delivered on March 13, a copy of which has just reached us, Mr. Bedford McNeill devoted his attention more particularly to the statistics of production of the more important metals, laying especial stress upon the precious metals. He showed that the production of metals was increasing at a rate quite unexampled in the history of the world, the percentages of increase during the decade ending in 1911 ranging from 29 in the case of lead up to no less than 513 for aluminium, whilst it was 58 for iron and 68 for copper. The metal miner is therefore supplying the world with the metals used in the arts upon an enormously greater scale than ever before. As regards the precious metals, it is shown that within the above-named decade the production of gold has increased by 79 per cent., and that the world's annual output of gold is now more than equal to the total production for the sixty years preceding the year 1700. Mr. McNeill shows that this increase of production is to some small extent counteracted by the remarkable absorption of gold that has been taking place for some years past in India, and to a smaller extent also in Egypt. The production of silver has also undergone an increase, though less than gold, the increase during the decade 1901–11 being 41 per cent.; the actual production of silver during that period was ten times as great as that of gold, though this proportion is one that appears to fluctuate considerably from time to time.

WHEN our knowledge of the mean depth of the oceans was less extensive than it is now, it was supposed that a close approximation along certain lines was given by the velocity of seismic sea-waves. The formula (Lagrange's) used for the purpose was $v=\sqrt{(gh)}$, where v is the mean velocity of the waves and h the mean depth along the line of ocean traversed by them. It was shown, however, by Dr. Davison (*Phil. Mag.*, vol. xliii., 1897, pp. 33–36) that, when the depth is variable, the formula gives too great a depth, and that it should be $v = s \Big/ \int \frac{ds}{\sqrt{(gh)}}$, s being the distance from the epicentre. Prof. Rudski ("Physik der Erde," 1911, p. 340) suggested the formula $v=\frac{1}{s}\int \sqrt{(gh)}ds$. Prof. G. Platania has recently made a comparison of the results given by the three formulæ in the case of the Calabrian earthquake of October 23, 1897, the sea-waves of which were registered by the mareographs at Messina and Catania (*Boll. Soc. Sism. Ital.*, vol. xvi., 1912, pp. 166–174). The actual mean velocity was 102 metres per second, while the values given by Davison's, Rudski's, and Lagrange's formulæ were respectively 109, 114, and 120 metres per second.

Vol. xiii., part 2, of the Proceedings of the Nova Scotian Institute of Science contains an account, by Mr. J. H. L. Johnstone, of measurements of the specific resistance of ice at temperatures between 0° and −19° C., made by a new method, in which the effects of electrolytic polarisation were eliminated. The values obtained agree fairly well with those obtained by Profs. Ayrton and Perry, using a different method, and show that the value of the temperature coefficient is very much higher than that of ordinary electrolytes and decreases in value as the temperature departs from 0°. The same number of the Proceedings also includes an interesting account of the sacred trees of India, by Capt. J. H. Barbour.

We have received a copy of the reprint of the Carnegie Institution of Washington paper on the magnetic survey work in southern and central Africa carried out in 1908 and 1909 by Prof. Beattie, of the South African College, Cape Town, and Prof. Morrison, of Victoria College, Stellenbosch, who for the time necessary were made officials of the Carnegie Institution. The cost of the work was defrayed by the Carnegie Institution, 2000*l.*, the Royal Society, 250*l.*, and Sir L. S. Jameson and Sir L. Mitchell, 100*l.* The survey covers the regions between the Zambezi and the Nile, including parts of north-eastern Rhodesia, the Congo, German East Africa, Uganda, Nyasaland, and British East Africa, with further observations in Cape Colony and German South-West Africa. Throughout most of the journey the only means of conveyance was by native carriers, and the history of the expedition reads like a chapter of Livingstone's travels. We offer our congratulations to Profs. Beattie and Morrison on the successful accomplishment of an important and much-needed piece of magnetic survey work.

Separate copies have reached us of a considerable number of papers which have been published by the staff of the Reichsanstalt during the present year. Dr. F. Henning has compared the platinum resistance with the hydrogen thermometer at temperatures between 0° C. and −193° C. He finds that Callendar's formula connecting the two holds only down to −40° C., and proposes another formula, which holds over the whole range. Drs. K. Scheel and W. Heuse have determined by the continuous-flow method the specific heats at constant pressure of helium, hydrogen, nitrogen, oxygen, air, and carbonic oxide, at temperatures down to that of liquid air. The specific heats of helium and hydrogen increase with increase of temperature, the others decrease. In connection with these researches a thermostat suitable for low temperatures has been devised by Dr. Henning. It depends on the passage of a stream of liquid air through a suitable liquid, as, for example, petroleum ether. The air evaporates in the liquid, and the rate of evaporation determines the temperature to which the liquid is cooled. The former papers will be found in the March and April numbers of the *Annalen der Physik,* and the last in the February number of the *Zeitschrift für Instrumentenkunde.*

It has long been known that the photometry of sources of light widely differing in colour is rendered difficult by the peculiarities of the eye, especially at low illuminations. Until recently this was not of much practical importance, since most of our commercial illuminants yielded continuous spectra and light of substantially the same tint. Now, however, things are changed. A recent communication by Messrs. Broca, Jouast, De la Gorce, and Laporte (*Bull. Soc. Int. des Electriciens,* February, 1913) shows the perplexities likely to be met with in comparing such sources as the mercury-vapour lamp and the new neon tube. The former contains only yellow, blue, and green light, the latter only red and orange rays between 0·585 μ and 0·640 μ. The authors meet with differences of 100 per cent. or more, according to the illumination of the photometer screen. Similar discrepancies are caused by the personal errors of different observers. To these difficulties, due to the colour of the light, must be added those arising from the fact that the light is not a point, but a tube of considerable dimensions, so that the ordinary inverse square law of photometry does not apply. Another interesting observation is that objects illuminated by the neon light appear more sharply defined than in the case of ordinary illuminants. The reason would appear to be that the monochromatic nature of the light avoids the results of chromatic aberration in the eye.

Some new experiments on the preparation and properties of pure alcohol are described in the Chemical Society's Journal by Mr. R. W. Merriman. The density of the pure alcohol was established for about forty samples as 0·80628 at 0°/4°. It was shown that freshly burnt quicklime prepared from marble is a better drying agent than metallic calcium, which produces no improvement in alcohol dried by lime. In distilling the alcohol from the lime it is necessary to reject the first and last fractions; the latter have a high density, which is attributed to partial dehydration of calcium hydroxide as the temperature of distillation rises from 80° to 100° on the water-bath.

A "New Iron Bacterium" is described by Mr. E. M. Mumford in the Transactions of the Chemical Society. It was discovered in the Bridgewater Canal tunnels at Wasley, Lancashire, where the water contains much iron derived from colliery pump water. The new bacterium appears to have a twofold action, an aërobic action whereby it precipitates ferric hydroxide from iron solutions, and an anaërobic action which transforms the ferric hydroxide into bog iron ore with partial reduction of the iron to a ferrous state. It is probable that the deposits of bog ore are due to this organism rather than to the higher bacteria, since the latter have not the facultative power necessary to dehydrate and reduce the ferric hydroxide to bog ore.

THE English Ceramic Society has recently issued the twelfth volume of its Transactions, and is to be congratulated on the good work which it continues to do in furthering the application of scientific methods to so important an industry. Attention may be directed specially to a paper by Mr. A. J. Campbell in which the application of "surface combustion" to pottery practice is suggested, and to a description by Dr. W. R. Ormandy of an "Electrical Process for the Purification of Clays." This consists in partially coagulating the emulsified clay by the addition of electrolytes, and then further purifying the emulsion by passing it through a vessel containing electrodes differing in potential by 60 to 100 volts. The chief impurities are electropositive, and can thus be removed, even when present in very fine particles. The clay-substance is electronegative, and is laid down in the form of a continuous blanket 1½ yards wide and ¼ in. thick. It is deposited in a remarkably dry state with only 18 to 20 per cent. of water, and may contain as much as 99·5 per cent. of china-clay substance.

MESSRS. J. AND A. CHURCHILL have nearly ready an English translation of the Italian work, "A Treatise on General and Industrial Organic Chemistry," by Dr. Ettore Molinari. The work of translation has been carried out by Mr. T. H. Pope, of the School of Malting and Brewing of the University of Birmingham.

AN examination of "The Social Guide, 1913," which has now been issued by Messrs. A. and C. Black, at the price of 2*s.* 6*d.* net, shows that the editors regard some scientific meetings at least as social events. Attention is directed, for instance, to the meetings of the Royal Society, the Royal Institution, the Royal Geographical Society, and the British Association. The University Extension meetings arranged in the summer by the Universities of Oxford and Cambridge are also referred to, but, speaking generally, the matters of prominence relate to sports and amusements. The subjects are arranged alphabetically, but an index would assist reference greatly.

ERRATUM.—The term $\dfrac{\Sigma P - P.N}{\frac{N}{2}}$ on p. 279 of NATURE of May 15 should have been $\dfrac{\Sigma P - P.M}{\frac{N}{2}}$.

OUR ASTRONOMICAL COLUMN.

ASTRONOMICAL OCCURRENCES FOR JUNE:—

June 1. 4h. 4m. Venus in conjunction with the Moon (Venus 4° 38′ S.).
,, 12h. 0. Mercury in superior conjunction with the Sun.
4. 0h. 25m. Saturn in conjunction with the Moon (Saturn 6° 22′ S.).
,, 16h. 4m. Mercury in conjunction with the Moon (Mercury 3° 48′ S.).
7. 4h. 40m. Neptune in conjunction with the Moon (Neptune 5° 9′ S.).
19. 14h. 26m. Jupiter in conjunction with the Moon (Jupiter 4° 47′ N.).
June 21. 8h. 8m. Uranus in conjunction with the Moon (Uranus 3° 27′ N.).
,, 13h. 9m. Sun enters Sign of Cancer—summer commences.
22. 6h. 0m. Vesta in conjunction with the Moon (Vesta 0° 31′ N.).
23. 22h. 35m. Mercury in conjunction with Neptune (Mercury 2° 11′ N.).
24. 2h. 0m. Venus at greatest distance from the Sun.
29. 5h. 5m. Mars in conjunction with the Moon (Mars 4° 51′ S.).
30. 7h. 4m. Venus in conjunction with the Moon (Venus 7° 44′ S.).

COMET 1913*a* (SCHAUMASSE).—*Astronomische Nachrichten* No. 4652 contains not only numerous observations of the comet which Mr. Schaumasse discovered, but three sets of elements and ephemerides computed by Kiess and Nicolson, Ebell, and Fayet and Schaumasse. The observations made between May 7 and 11 give the magnitude between 9·5 and 11.

The following parabolic elements are those calculated by the last two observers mentioned above, and they are based on Schaumasse's observations at Nice on May 6, 7, and 8:—

$$T = 1913 \text{ May } 15{\cdot}4222 \text{ M.T. Paris.}$$

$$\left.\begin{array}{l} \omega = 53^\circ\ 32'\ 8'' \\ \Omega = 315\ \ 21\ \ 7 \\ i = 152\ \ 31\ \ 26 \end{array}\right\} 1913{\cdot}0$$

$$\log q = 0{\cdot}162920$$

Ephemeris for 12h. M.T. Paris.

	α h. m. s.	δ ° ′
May 30	17 45 55	+38 31
June 1	17 15 56	+40 6
,, 3	16 45 33	+41 9
,, 5	16 15 50	+41 35

EFFECTIVE TEMPERATURES OF STARS.—An important communication is published in the *Comptes rendus* of May 5 (vol. clvi., No. 18, p. 1355), by Dr. Charles Nordmann, relative to the effective temperatures of stars. It will be remembered that Dr. Rosenberg published recently (*Astronomische Nachrichten*, No. 4628, p. 360) the results of measures of the effective temperatures of seventy stars based on the determinations of the intensity of the photographic spectra. It will be remembered also that Dr. Nordmann made a like series of measures based, on the other hand, on visual observations. As the two series of measures deal with different regions of the spectrum they may be considered as independent determinations, and Dr. Nordmann here compares the results obtained in cases where the same star has been measured. The following table shows the resulting comparison:—

	Effective temperatures (in absolute degrees)		
	Nordmann λλ 460–630	Rosenberg λλ 400–500	Spectral types (Lockyer)
δ Persei	18500	15500	Algolian
ε ,,	15200	23000	Crucian
β ,, (Algol)	13300	12000	Algolian
α Lyræ (Vega)	12200	22000	Sirian
α Persei	8300	6500	Polarian
α Ursæ Minoris (Polaris)	8200	5200	,,
α Canis Minoris (Procyon)	6800	7000	Procyonian
γ Cygni	5620	5100	Polarian
Sun	5320	4950	Arcturian
α Aurigæ (Capella)	4720	4500	,,
β Andromedæ	3700	2650	Antarian
α Tauri (Aldebaran)	3500	2150	Aldebarian

Dr. Nordmann directs attention to the good agreement of the two series, with one or two exceptions, which he discusses, and points out that if the stars be arranged in the order of ascending temperatures they become hotter and hotter as one passes from the